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AMERICAN SOCIETY

OF

CIVIL ENGINEERS

VOL. XLIII—No. 7



September, 1917

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AMERICAN SOCIETY OF CIVIL ENGINEERS

INSTITUTED 1852

PROCEEDINGS

This Society is not responsible for any statement made or opinion expressed in its publications.

SOCIETY AFFAIRS

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MINUTES OF MEETINGS

OF THE SOCIETY

September 5th, 1917.—The meeting was called to order at 8.30 P. M.; President Pegram in the chair; Chas. Warren Hunt, Secretary; and present, also, 78 members and 5 guests.

The minutes of the meetings of May 16th and June 6th, 1917, were approved as printed in *Proceedings* for August, 1917.

A paper by Floyd A. Nagler, Jun. Am. Soc. C. E., entitled "Obstruction of Bridge Piers to the Flow of Water", was presented by the author and illustrated with lantern slides. The Secretary read communications on the subject from Messrs. Mansfield Merriman, E. W. Lane, A. J. Wiley, and R. D. Goodrich, and the paper was discussed orally by Messrs. F. H. Frankland and C. E. Fowler.

The Secretary read a letter from the representatives of the widow of the late Stanley A. Miller, M. Am. Soc. C. E., who was murdered by bandits in Santo Domingo, on May 13th, 1917. This letter re-

quested the Society to pass resolutions urging upon the State Department prompt and vigorous prosecution of a claim by Mrs. Miller and her infant daughter against the Republic of Santo Domingo for a money indemnity. There was enclosed with this letter a copy of the petition which has been filed with the State Department of the United States requesting interposition with the Republic of Santo Domingo in order that Mrs. Miller may be compensated for the death of her husband, and reciting a complete history of the case.

On motion, duly seconded, the President was authorized to appoint a suitable committee to draft a communication to the State Department of the United States in the form of resolutions, setting forth the sense of the meeting and memorializing the State Department and recommending the action sought by Mrs. Miller.

The Secretary announced the following deaths:

WILLIAM HARRY ARNOLD, of New York City, elected Member, May 1st, 1907; died August 13th, 1917.

CHARLES LEE CRANDALL, of Ithaca, N. Y., elected Junior, June 7th, 1876; Member, October 5th, 1892; died August 25th, 1917.

FRANK FIRMSTONE, of Easton, Pa., elected Member, August 7th, 1878; died June 27th, 1917.

JAMES EDGAR JENKINS, of New York City, elected Associate Member, December 5th, 1906; Member, March 14th, 1916; died July 5th, 1917.

DAVID WENDEL SPENCE, of College Station, Tex., elected Member, October 1st, 1913; died June 29th, 1917.

JOEL MANNING HOWARD, of Ogdensburg, N. Y., elected Associate Member, June 4th, 1913; died May 22d, 1917.

CHARLES MARVIN EVEREST, of Rochester, N. Y., elected Fellow, November 1st, 1892; died July 22d, 1917.

Adjourned.

ANNOUNCEMENTS

The House of the Society is open from 9 A. M. to 10 P. M., every day, except Sundays, Fourth of July, Thanksgiving Day, and Christmas Day.

FUTURE MEETINGS

October 3d, 1917.—8.30 P. M.—This will be a regular business meeting. A paper by William Barclay Parsons, M. Am. Soc. C. E., entitled "The Cape Cod Canal", will be presented for discussion.

This paper was printed in *Proceedings* for August, 1917.

October 17th, 1917.—8.30 P. M.—At this meeting two papers will be presented for discussion, as follows: "Detention Reservoirs with Spillway Outlets as an Agency in Flood Control", by H. M. Chittenden, M. Am. Soc. C. E.; and "Hydraulic Phenomena and the Effect of Spreading Flood Water in the San Bernardino Basin, Southern California", by A. L. Sonderegger, M. Am. Soc. C. E.

These papers are printed in this number of *Proceedings*.

November 7th, 1917.—8.30 P. M.—A regular business meeting will be held, and a paper entitled, "The Subsidence of Muck and Peat Soils in Southern Louisiana and Florida", by Charles W. Okey, Assoc. M. Am. Soc. C. E., will be presented for discussion.

This paper is printed in this number of *Proceedings*.

SEARCHES IN THE LIBRARY

In January, 1902, the Secretary was authorized to make searches in the Library, upon request, and to charge therefor the actual cost to the Society for the extra work required. Since that time many searches have been made, and bibliographies and other information on special subjects furnished.

The resulting satisfaction, to the members who have made use of the resources of the Society in this manner, has been expressed frequently, and leaves little doubt that if it were generally known to the membership that such work would be undertaken, many would avail themselves of it.

The cost is trifling compared with the value of the time of an engineer who looks up such matters himself, and the work can be performed quite as well, and much more quickly, by persons familiar with the Library.

In asking that such work be undertaken, members should specify clearly the subject to be covered, and whether references to general books only are desired, or whether a complete bibliography, involving search through periodical literature, is desired.

It sometimes happens that references are found which are not readily accessible to the person for whom the search is made. In that case the material may be reproduced by photography, and this can be done for members at the cost of the work to the Society, which is small. This method is particularly useful when there are drawings or figures in the text, which would be very expensive to reproduce by hand.

A list of 989 bibliographies made in the Library, giving the cost of each, was published in Vol. LXXX of *Transactions*.

Since October 1st, 1916, the Library of the American Society of Civil Engineers has ceased to exist, as such, having been merged with the Libraries of the Mining, Mechanical, and Electrical Engineers, and become a part of the Library of the United Engineering Society. There were 67 000 accessions, which were not duplicates, turned over to that Library.

Hereafter, therefore, requests for searches should be addressed to the Librarian, United Engineering Society, 29 West 39th Street, New York City.

PAPERS AND DISCUSSIONS

Members and others who take part in the oral discussions of the papers presented are urged to revise their remarks promptly. Written communications from those who cannot attend the meetings should be sent in at the earliest possible date after the issue of a paper in *Proceedings*.

All papers accepted by the Publication Committee are classified by the Committee with respect to their availability for discussion at meetings.

Papers which, from their general nature, appear to be of a character suitable for oral discussion, will be published as heretofore in *Proceedings*, and set down for presentation to a future meeting of the Society, and on these oral discussions, as well as written communications, will be solicited.

All papers which do not come under this heading, that is to say, those which, from their mathematical or technical nature, in the opinion of the Committee, are not adapted to oral discussion, will not be scheduled for presentation to any meeting. Such papers will be published in *Proceedings* in the same manner as those which are to be presented at meetings, but written discussions only will be requested for subsequent publication in *Proceedings* and with the paper in the volumes of *Transactions*.

The Board of Direction has adopted rules for the preparation and presentation of papers, which will be found on page 429 of the August, 1913, *Proceedings*.

**LOCAL ASSOCIATIONS OF MEMBERS
OF THE AMERICAN SOCIETY OF CIVIL ENGINEERS**

San Francisco Association, Organized 1905.

J. D. Galloway, President; E. T. Thurston, Secretary-Treasurer, 57 Post Street, San Francisco, Cal.

The San Francisco Association of Members of the American Society of Civil Engineers holds regular bi-monthly meetings, with banquet, and weekly informal luncheons. The former are held at 6 p. m., at the Palace Hotel, on the third Tuesday of February, April, June, August, October, and December, the last being the Annual Meeting of the Association.

Informal luncheons are held at 12.30 p. m., every Wednesday, and the place of meeting may be ascertained by communicating with the Secretary.

The by-laws of the Association provide for the extension of hospitality to any member of the Society who may be temporarily in San Francisco, and any such member will be gladly welcomed as a guest.

(Abstract of Minutes of Meeting)

August 21st, 1917.—The meeting was called to order at the Palace Hotel; Vice-President Brunnier in the chair; E. T. Thurston, Secretary; and present, also, 66 members and guests.

Messrs. Bush, Judell, and Wolf were appointed as the Entertainment Committee for the October meeting.

For the Committee on the Frickstad Case, Professor Charles D. Marx reported that Mr. Frickstad had been entirely vindicated and reinstated and that a full report on the matter would probably be presented by the Committee at the next meeting.

For the Committee on Civil Service Laws, Mr. J. Newman gave a résumé of a lengthy report embodying a comparative analysis of the civil service laws of the United States, the State of California, and the Cities of San Francisco, Los Angeles, and Oakland. This report was referred to the Board of Directors with authority to publish it.

For the Committee on the Discussion of Papers published in *Proceedings*, Mr. H. D. Dewell read a report recommending against sectional meetings for the discussion of Society papers on account of the small attendance at such meetings and the tendency to detract from the attendance and interest of the regular meetings. The report recommended that occasional regular meetings be devoted to the discussion of Society papers to be selected by the Board of Directors. Discussion of the recommendations of this report will be in order at the October meeting.

For the Committee on Building Construction Safety Orders, the Secretary reported that the final meeting of the General Committee had been held, and that the Industrial Accident Commission would shortly issue a code of safety rules and regulations governing building construction throughout the State.

The Secretary reported the receipt of a communication from Director J. V. Davies requesting the assistance of the Association in securing all available information regarding highways applicable for

military purposes in District No. 13, for the use of the Council of National Defense.

A paper by Walter C. Howe, M. Am. Soc. C. E., entitled "State Highway Construction in California under Commission Supervision", was presented by the author, who illustrated his remarks with stereopticon views.

Adjourned.

Colorado Association, Organized 1908.

Robert Follansbee, President; L. R. Hinman, Secretary-Treasurer, 1400 West Colfax Avenue, Denver, Colo.

The meetings of the Colorado Association of Members of the American Society of Civil Engineers (Denver, Colo.) are held on the second Saturday of each month, except July and August. The hour and place of meeting are not fixed, but this information will be furnished on application to the Secretary. The meetings are usually preceded by an informal dinner. Members of the American Society of Civil Engineers will be welcomed at these meetings.

Weekly luncheons are held on Wednesdays at 12.30 P. M., at Daniel's and Fisher's.

Visiting members are urged to attend the meetings and luncheons.

Atlanta Association, Organized 1912.

Paul H. Norcross, President; Thomas P. Branch, Secretary-Treasurer, Georgia School of Technology, Atlanta, Ga.

The Association holds its meetings at the University Club, Atlanta, Ga. Regular monthly luncheon meetings are held to which visiting members of the Society are always welcome.

Baltimore Association, Organized 1914.

Mason D. Pratt, President; Charles J. Tilden, Secretary-Treasurer, The Johns Hopkins University, Baltimore, Md.

(Abstract of Minutes of Meeting)

May 2d, 1917.—The meeting was called to order at 9 P. M., at the Merchants Club; President Bush in the chair; C. J. Tilden, Secretary; and present, also, 24 members and 1 guest.

The minutes of the meeting of March 21st, 1917, were read and approved.

The Secretary-Treasurer was instructed to send out to letter-ballot the proposed revision of the Constitution of the Association, which was submitted to the meeting of March 21st, 1917, and had received the formal approval of the Board of Direction of the Society on April 17th, 1917.

The report of the Committee appointed to study and report on the relations of Local Associations to the Society was presented.

On motion, duly seconded, it was ordered that the report be received and the course of action outlined therein be followed.

The Secretary presented a letter from Thomas C. Desmond, Assoc. M. Am. Soc. C. E., calling attention to the opportunity for engineers in the engineering regiment to be attached to the proposed Roosevelt

Division. On motion, duly seconded, the matter was laid on the table.

The Secretary-Treasurer submitted his report of receipts and expenditure for the year ending May 1st, 1917. He also reported that the Association now had 58 members, and that the total membership of the Society in Maryland was 121.

In answer to a question, the Secretary stated that invitations to join the Association had been sent to the remaining members of the Society in Maryland, and that a small number had accepted. On motion, duly seconded, the report was accepted.

The Dinner Committee, Messrs. Warren and Whitman (Mr. Greiner absent), made a brief report.

The following officers were elected: President, Mason D. Pratt; Vice-President, Ezra B. Whitman; Secretary-Treasurer, Charles J. Tilden; Directors, W. H. Dorsey, A. H. Hartman, W. D. Janney, Jenks B. Jenkins, W. W. Pagon, and W. F. Strouse.

A vote of thanks was given to the Dinner Committee, and also to the Secretary-Treasurer.

President Pratt took the chair and addressed the meeting briefly.

Messrs. Pitts, Warren, and Whitman were appointed a committee to report on the advisability of holding monthly meetings of the Association, with or without a luncheon or dinner.

On motion, duly seconded, it was decided that meetings be held at least once every two months.

Adjourned.

Cleveland Association, Organized 1914.

W. J. Watson, President; George H. Tinker, Secretary-Treasurer, 516 Columbia Building, Cleveland, Ohio.

(Abstract of Minutes of Meeting)

June 30th, 1917.—The meeting was called to order; President Watson in the chair; George H. Tinker, Secretary; and present, also, 18 members.

Correspondence was read from the St. Louis Association, and also from Chas. Warren Hunt, Secretary of the Society, concerning the rejection by the Board of Direction of the Association's request for the appointment of a Committee on Rivers and Harbors.

President Watson announced that 23 000 duplicate volumes from the Library of the Society had been turned over to the Association for placing in the Library of the Cleveland Engineering Society, and that the latter had accepted the custody of the books.

President Watson announced that Messrs. Robert Hoffman, D. Moomaw, and K. H. Osborn, had been appointed as delegates to the Inter-Society Committee.

In the matter of the report of the Committee of the Board of Direction on Relations of Local Associations, the Secretary was directed to request written discussion from members of the Association and to forward such discussions to the Secretary of the Society.

The Secretary read a letter from Director J. V. Davies requesting the Association to assist in securing information concerning highways

in District No. 6 for the Council of National Defense. After discussion, it was voted that the Executive Committee appoint a committee of three to take charge of the collection of the information, and that this committee be empowered to call on other members of the Association and of the Society in the Sixth District for assistance.

Adjourned.

Detroit Association, Organized 1916.

T. A. Leisen, President; Clarence W. Hubbell, Secretary, 2334 Dime Bank Building, Detroit, Mich.

The regular meetings of the Association are held on the second Friday of December, April, and October, the last being the Annual Meeting.

District of Columbia Association, Organized 1916.

A. P. Davis, President; John C. Hoyt, Secretary-Treasurer, U. S. Geological Survey, Washington, D. C.

Duluth Association, Organized 1917.

F. E. House, President; Walter G. Zimmermann, Secretary, Wolvin Building, Duluth, Minn.

The regular meetings of the Association are held monthly. The time and place of meeting are not fixed, but this information will be furnished on application to the Secretary. The Annual Meeting is held on the third Monday of May.

Illinois Association, Organized 1916.

C. F. Loweth, President, Chicago, Ill.

The regular meetings of the Association are held on the second Monday of March, June, September, and December, the last being the Annual Meeting. The hour and place of meeting are not fixed, but this information will be furnished on application to the President.

Louisiana Association, Organized 1914.

W. B. Gregory, President; Charles W. Okey, Secretary, Tulane University, New Orleans, La.

The regular meetings of the Association are held at The Cabildo, New Orleans, La., on the first Monday of January, April, July, and October.

Nebraska Association, Organized 1917.

Frank T. Darrow, President; Homer V. Knouse, Secretary-Treasurer, 115 City Hall, Omaha, Nebr.

Regular meetings of the Association are held on the first Saturday of each month, except July and August, and at such places as may be appointed from time to time by the Executive Committee. The Annual Meeting is held in Lincoln, Nebr., on the second Friday in January.

It is probable that frequent luncheons will be held in Omaha, in addition to the monthly meetings, at which visiting members will be

welcomed. The place of meeting may be ascertained by communicating with the Secretary.

Northwestern Association, Organized 1914.

George L. Wilson, President; Ralph D. Thomas, Secretary, 508 South First Street, Minneapolis, Minn.

Philadelphia Association, Organized 1913.

Samuel T. Wagner, President; C. W. Thorn, Secretary, 1313 South Broad Street, Philadelphia, Pa.

The regular meetings of the Association are held at the Engineers' Club of Philadelphia, 1317 Spruce Street, on the first Monday in January, April, and October, the last being the Annual Meeting.

Portland, Ore., Association, Organized 1913.

J. P. Newell, President; J. A. Currey, Secretary, 194 North 13th Street, Portland, Ore.

St. Louis Association, Organized 1914.

J. A. Ockerson, President; Gurdon G. Black, Secretary-Treasurer, 34 East Grand Avenue, St. Louis, Mo.

The meetings of the Association are held at the Engineers' Club Auditorium. The Annual Meeting is held on the fourth Monday in November. The time of other meetings is not fixed, but this information will be furnished on application to the Secretary.

San Diego Association, Organized 1915.

W. J. Gough, President; J. R. Comly, Secretary-Treasurer, 4105 Falcon Street, San Diego, Cal.

Seattle Association, Organized 1913.

Joseph Jacobs, President; Carl H. Reeves, Secretary-Treasurer, 444 Henry Building, Seattle, Wash.

The regular meetings of the Association are held at 12.15 p. m., on the last Monday of each month, at The Frye Hotel.

Southern California Association, Organized 1914.

H. Hawgood, President; Wilkie Woodard, Secretary, 435 Consolidated Realty Building, Los Angeles, Cal.

The Southern California Association of Members of the American Society of Civil Engineers (Los Angeles, Cal.) holds regular bi-monthly meetings, with banquet, at Hotel Clark, on the second Wednesday of February, April, June, August, October, and December, the last being the Annual Meeting of the Association.

Informal luncheons are held at 12.15 p. m. every Wednesday, and the place of meeting may be ascertained from the Secretary.

The by-laws of the Association provide for the extension of hospitality to any member of the Society who may be temporarily in Los Angeles, and any such member will be gladly welcomed as a guest at any of the meetings or luncheons.

(Abstract of Minutes of Meeting)

August 15th, 1917.—The meeting was called to order at the Hotel Clark; President Hawgood in the chair; M. K. Barnard acting as Secretary.

The minutes of the meeting of April 11th, 1917, were read and approved, and reports of Committees were called for. The following new members were introduced: Messrs. E. G. Sheibley, Charles H. Wondries, and E. L. Adams.

Mr. H. W. Dennis, of the Programme Committee, announced that Mr. T. D. Allin, Commissioner of Public Works, of Pasadena, had extended an invitation to the Association to inspect the new Municipal Sewage Disposal Plant, on September 8th, 1917.

Mr. George G. Anderson, Chairman of the Committee on Relations of Local Associations, submitted a written report of that Committee. On motion, duly seconded, it was decided to postpone action on the report until the next meeting of the Association.

Mr. Anderson gave an interesting talk on the recent flood in the Colorado River, illustrating his remarks with lantern slides. During the course of this address, attention was called to the remarkably correct predictions of the Weather Bureau Official at Denver, which were of invaluable service to those in charge of the flood protection work in the Imperial Valley.

On motion, duly seconded, the Secretary was instructed to write to Mr. F. H. Brandenburg, in charge of the Weather Bureau Office, in Denver, complimenting him on the accuracy of his predictions and expressing the appreciation of the Association of the value of his work.

Adjourned.

Spokane Association, Organized 1914.

J. C. Ralston, President; B. J. Garnett, Secretary, City Hall, Spokane, Wash.

The regular meetings of the Association are held on the second Friday of each month, except July and August. The hour and place of meeting are not fixed, but this information will be furnished on application to the Secretary.

Visiting members are invited to attend the meetings and luncheons.

Texas Association, Organized 1913.

John B. Hawley, President; J. F. Witt, Secretary, Dallas, Tex.

Utah Association, Organized 1916.

George L. Swendsen, President; H. S. Kleinschmidt, Secretary-Treasurer, 306 Dooly Building, Salt Lake City, Utah.

The Annual Meeting of the Association is held on the first Wednesday in April. The time of other meetings is not fixed, but this information will be furnished on application to the Secretary.

**PRIVILEGES OF ENGINEERING SOCIETIES
EXTENDED TO MEMBERS OF THE
AMERICAN SOCIETY OF CIVIL ENGINEERS**

Members of the American Society of Civil Engineers will be welcomed by the following Engineering Societies, both to the use of their Reading Rooms, and at all meetings:

American Institute of Electrical Engineers, 25 West Thirty-ninth Street, New York City.

American Institute of Mining Engineers, 25 West Thirty-ninth Street, New York City.

American Society of Mechanical Engineers, 25 West Thirty-ninth Street, New York City.

Associação dos Engenheiros Cívis Portuguezes, Lisbon, Portugal.

Australasian Institute of Mining Engineers, Melbourne, Victoria, Australia.

Boston Society of Civil Engineers, 715 Tremont Temple, Boston, Mass.

Brooklyn Engineers' Club, 117 Remsen Street, Brooklyn, N. Y.

Canadian Society of Civil Engineers, 176 Mansfield Street, Montreal, Que., Canada.

Civil Engineers' Society of St. Paul, St. Paul, Minn.

Cleveland Engineering Society, Chamber of Commerce Building, Cleveland, Ohio.

Cleveland Institute of Engineers, Middlesbrough, England.

Dansk Ingeniørforening, Amaliegade 38, Copenhagen, Denmark.

Detroit Engineering Society, 46 Grand River Avenue, West, Detroit, Mich.

Engineering Association of Nashville, Commercial Club Building, Nashville, Tenn.

Engineers and Architects Club of Louisville, 1412 Starks Building, Louisville, Ky.

Engineers' Club of Baltimore, 6 West Eager Street, Baltimore, Md.

Engineers' Club of Kansas City, E. B. Murray, Secretary, 920 Walnut Street, Kansas City, Mo.

Engineers' Club of Minneapolis, 17 South Sixth Street, Minneapolis, Minn.

Engineers' Club of Philadelphia, 1317 Spruce Street, Philadelphia, Pa.

Engineers' Club of St. Louis, 3817 Olive Street, St. Louis, Mo.

Engineers' Club of Toronto, 96 King Street, West, Toronto, Ont., Canada.

Engineers' Club of Trenton, Trent Theatre Building, 12 North Warren Street, Trenton, N. J.

Engineers' Society of Northeastern Pennsylvania, 415 Washington Avenue, Scranton, Pa.

- Engineers' Society of Pennsylvania**, 31 South Front Street, Harrisburg, Pa.
- Engineers' Society of Western Pennsylvania**, 568 Union Arcade Building, Pittsburgh, Pa.
- Florida Engineering Society**, J. R. Benton, Secretary, Gainesville, Fla.
- Institute of Marine Engineers**, The Minories, Tower Hill, London, E., England.
- Institution of Civil Engineers**, Great George Street, Westminster, S. W., London, England.
- Institution of Engineers of the River Plate**, Calle 25 de Mayo 195, Buenos Aires, Argentine Republic.
- Institution of Naval Architects**, 5 Adelphi Terrace, London, W. C., England.
- Junior Institution of Engineers**, 39 Victoria Street, Westminster, S. W., London, England.
- Koninklijk Instituut van Ingenieurs**, The Hague, The Netherlands.
- Louisiana Engineering Society**, State Museum Building, Chartres and St. Ann Streets, New Orleans, La.
- Memphis Engineers' Club**, Memphis, Tenn.
- Midland Institute of Mining, Civil and Mechanical Engineers**, Sheffield, England.
- Montana Society of Engineers**, Butte, Mont.
- North of England Institute of Mining and Mechanical Engineers**, Newcastle-upon-Tyne, England.
- Oregon Society of Civil Engineers**, Portland, Ore.
- Pacific Northwest Society of Engineers**, 803 Central Building, Seattle, Wash.
- Rochester Engineering Society**, Rochester, N. Y.
- Sociedad Colombiana de Ingenieros**, Bogota, Colombia.
- Sociedad de Ingenieros del Peru**, Lima, Peru.
- Societe des Ingenieurs Civils de France**, 19 rue Blanche, Paris, France.
- Society of Engineers**, 17 Victoria Street, Westminster, S. W., London, England.
- Svenska Teknologforeningen**, Brunkebergstorg 18, Stockholm, Sweden.
- Tekniske Forening**, Vestre Boulevard 18-1, Copenhagen, Denmark.
- Vermont Society of Engineers**, George A. Reed, Secretary, Montpelier, Vt.
- Western Society of Engineers**, 1737 Monadnock Block, Chicago, Ill.

**ACCESSIONS TO THE
UNITED ENGINEERING SOCIETY LIBRARY**

(From July 11th to August 9th, 1917)

DONATIONS*

The statements made in these notices are taken directly from the books themselves, and this Society is not responsible for them.

WAR-SHIPS:

A Text-Book on the Construction, Protection, Stability, Turning, Etc., of War Vessels. By Edward L. Attwood. 6th ed. N. Y. and Lond., Longmans, Green and Co., 1917. 338 pp., 209 illus., 9 x 6 in., cloth. \$4.00.

This book has been written in response to suggestions made by senior naval officers taking the course in Naval Architecture at the Royal Naval College, Greenwich. An attempt has been made to treat the subject from the naval officers' standpoint, and certain parts have been treated with a view of meeting their special requirements.

SHIPYARD PRACTICE AS APPLIED TO WARSHIP CONSTRUCTION.

By Neil J. McDermaid. 2d ed. N. Y. and Lond., Longmans, Green & Co., 1917. 332 pp., 153 illus., 9 x 6 in., cloth. \$4.00.

A course of lectures given to Cadets of Naval Instruction at the Royal Naval College, Devonport. Describes the actual operations to be performed during the construction and outfitting of a warship.

NAVAL ARCHITECTURE.

By Cecil H. Peabody. 4th ed., rev. N. Y., John Wiley & Sons, Inc.; Lond., Chapman & Hall, Ltd., 1917. 641 pp., 218 illus., 1 diagram, 9 x 6 in., cloth. \$7.50.

Intended to give a consistent and connected statement of the commonly accepted theory of naval architecture. Intended for naval architects and shipbuilders, as well as for students. Discussions of certain devices for checking rolling of ships, such as Frahm's anti-rolling tanks and the steadying gyroscopes of Schlick and Sperry, have been introduced in this edition.

THE MODERN GAS TRACTOR:

Its Construction, Utility, Operation, and Repair: A Practical Treatise Covering Every Branch of Up-to-Date Gas Tractor Engineering, Driving, and Maintenance in a Non-Technical Manner, Considers Fully all Types of Power Plants and Their Components, Methods of Drive and Speed Changing Mechanisms, Describes Design and Construction of all Parts, Their Installation and Adjustment, as well as Practical Application of Tractors in the Field. By Victor W. Page. 2d ed., rev. and enl. N. Y., The Norman W. Henley Publishing Co., 1917. 32 + 504 pp., 225 illus., 7 x 5 in., cloth. \$2.00.

This treatise is intended to bridge the gap between the purely technical work and the manufacturers' instruction book dealing with one specific construction.

* Unless otherwise specified, books in this list have been donated by the publishers.

GAS AND FUEL ANALYSIS FOR ENGINEERS:

A Compend for Those Interested in the Economical Application of Fuel. Prepared Especially for the Use of Students at the Massachusetts Institute of Technology. By Augustus H. Gill. 8th ed., rev. N. Y., John Wiley & Sons, Inc.; Lond., Chapman & Hall, Ltd., 1917. 145 pp., 20 illus., 7 x 5 in., cloth. \$1.25.

An attempt to present in a concise yet clear form the methods of gas and fuel analysis involved in testing the efficiency of a boiler plant. The directions for using the bomb-calorimeter have been made to agree more closely with present usage in this edition, and minor corrections and additions have been made throughout the text.

GAS-LIGHTING AND GAS-FITTING:

A Pocket Book for Gas Companies, Gas Engineers, and Gas Fitters, for Manufacturers of Gas Fixtures and Dealers in Gas Appliances, for Gas Consumers, Architects, and Builders, Health Officers and Sanitary Inspectors. By Wm. Paul Gerhard. 4th ed. (Van Nostrand Science Series.) N. Y., D. Van Nostrand Co., 1913. 190 pp., 3 illus., 6 x 4 in., boards. 50 cents. (Gift of the author and publisher.)

COMPRESSED AIR:

Theory and Computations. By Elmo G. Harris. 2d ed., rev. and enl. N. Y., McGraw-Hill Book Co., Inc.; Lond., Hill Publishing Co., Ltd., 1917. 15 + 192 pp., 32 illus., 9 x 6 in., cloth. \$2.00.

Designed to present the mathematical treatment of the problems in the production and application of compressed air. In the present edition, errors and ambiguities have been eliminated and new matter has been added.

UNITED STATES ARTILLERY AMMUNITION:

3 to 6-in. Shrapnel Shells, 3 to 6-in. High Explosive Shells and Their Cartridge Cases. By Ethan Viall. N. Y., McGraw-Hill Book Co., Inc.; Lond., Hill Publishing Co., Ltd., 1917. 98 pp., 171 illus., 12 x 9 in., cloth. \$2.00.

This work is intended to give shop men, engineers, and manufacturers an accurate knowledge of the sizes, tools, shop work, and gauges for the more commonly used United States shells and cartridge cases. The descriptions are in minute detail and accompanied by numerous dimensioned drawings.

MACRAE'S BLUE BOOK:

America's Greatest Buying Guide; Vol. 8, 1917. Chic. and New York, MacRae's Blue Book Co. 1344 pp., 11 x 9 in., cloth. \$10.00.

Contents: Catalogue Section; Address Section; Representatives' Index; Classified Material Section; Comprehensive Trade Name Index; Miscellaneous Data Section; Standard List Prices of Building Materials and Iron and Steel Products; A Net Discount Computer.

EXPORT TRADE DIRECTORY, 1917-1918.

Compiled by B. Olney Hough. N. Y., American Exporter, Johnston Export Publishing Co. 537 pp., 1 map, 9 x 6 in., cloth. \$5.00.

Contents: Export Merchants in the United States; Manufacturers' Export Agents, Managers of Export Departments and Export Brokers; Leading Bankers Engaged in Foreign Exchange Business; Foreign Exchange Brokers; Marine Insurance Companies in New York City; Foreign Freight Forwarders; Some Export Trucking Companies in New York City; Steamship Services to Foreign Ports; How to Ship to Foreign Markets; Consuls of Foreign Countries in the United States; United States Consular and Commercial Representatives in Foreign Countries; Associations for the Promotion of Export Trade.

OFFICE ORGANIZATION AND MANAGEMENT.

By Carl C. Parsons. Chic., LaSalle Extension University, 1917. 14 + 313 pp., 59 illus., 1 diagram, 8 x 6 in., leather. \$2.50.

Treats of organization, management, layout, equipment, methods, systems, records, forms, employes, etc. Based on observation of the methods used in the offices of various large companies.

INTRODUCTION TO THE RARER ELEMENTS.

By Philip E. Browning. 4th ed., rev. N. Y., John Wiley & Sons, Inc.; Lond., Chapman & Hall, Ltd., 1917. 10 + 250 pp., 6 illus., 1 pl., 9 x 6 in., cloth. \$2.00.

The first edition of the book was prepared by the author from material used in a short lecture course at Yale University, as a convenient handbook in the introductory study of the rarer elements. Numerous changes and additions have been made in the present edition, in order to bring it up to date.

PHOTOGRAPHY IN COLOURS.

By George Lindsay Johnson. New and rev. ed. N. Y., E. P. Dutton & Co., 1917. 302 pp., 22 illus., 14 pl., 8 x 5 in., cloth. \$2.00.

Intended to supply the information necessary for successful work, with any of the recognized methods of photography in colors. In this edition errors have been corrected, descriptions of the Raydex color process, Gaumont's method of cinematography in colors, and Carrara's method of reproducing autochromes on paper, have been added, and chapters are included on art in color photography and on photomicrography in color.

CHEMICAL DISCOVERY AND INVENTION IN THE TWENTIETH CENTURY.

By Sir William A. Tilden. N. Y., E. P. Dutton & Co.; Lond., George Routledge and Sons, Ltd. (preface, 1916). 16 + 487 pp., 150 illus., 11 por., 9 x 6 in., cloth. \$3.50.

A semi-popular account of modern chemical discovery, covering both theory and applications. Contents: Chemical Laboratories and the Work Done in Them; Modern Discoveries and Theories; Modern Applications of Chemistry; Modern Progress in Organic Chemistry.

CITY PLANNING PROGRESS.

In the United States, 1917. Compiled by the Committee on Town Planning of the American Institute of Architects. Edited by George B. Ford, Assisted by Ralph F. Warner. Washington, D. C., The Journal of the American Institute of Architects. 8 + 207 pp., 113 illus., 11 x 8 in., paper. \$1.50.

A report on what has been accomplished or is projected in city planning in all cities in the United States of more than 25 000 inhabitants, and in a few cities and towns with a smaller population where the work is of special interest. Little attention has been devoted to housing, as a separate book on this subject is being prepared. Particular stress has been laid on the economic and engineering aspects of city planning. The report is based on questions sent out by the Committee, and includes only statements from authentic printed reports or from those signed by responsible authorities in the respective communities.

RAILWAY ESTIMATES:

Design, Quantities and Costs. By F. Lavis. N. Y., McGraw-Hill Book Co., Inc.; Lond., Hill Publishing Co., Ltd., 1917. 12 + 608 pp., 99 illus., 9 x 6 in., cloth. \$5.00.

A development of Chapter 8 of the author's "Railway Location, Surveys and Estimates", written to present in convenient form, data for the use of engineers called on to: (1) Report on the value of, or estimate the probable cost of, proposed railways, either before or after surveys have been made; (2) Estimate the value of existing

lines; (3) Design the general features of a proposed railway or modify the design of an existing line; (4) Determine the value or utility of such features of the general design of railways as affect their cost or value as transportation machines. It is not intended to cover the design of details of structures, but rather to present sufficient data for the determination of both quantities and costs to aid, not only in the preparation of estimates, but also in the determination of the general features of design.

SANITATION PRACTICALLY APPLIED.

By Harold Bacon Wood. N. Y., John Wiley & Sons, Inc.; Lond., Chapman & Hall, Ltd., 1917. 473 pp., 44 illus., 8 x 5 in., cloth. \$3.00.

This book serves as a corollary to treatises on the theory of hygiene and to laboratory manuals. It is intended primarily for the health officer and the student of public health topics, but the practical directions given are useful to all. Illustrations are introduced as explanatory of the text. Contents: The Need for Public Health Work; Statistics; The Control of Communicable Disease; Child Welfare; School Hygiene; Pure Foods; Clean Milk; Water Supplies; Sewage Disposal; Hygiene of the Home and Factory; The Destruction of Insects which Transmit Disease; The Educational Movement; Equivalents in Weights and Measures.

RECENT PRACTICE IN THE SANITARY DRAINAGE OF BUILDINGS:

With Memoranda on the Cost of Plumbing Work. By Wm. Paul Gerhard. (Van Nostrand Science Series.) 2d ed., rev. and enl. N. Y., D. Van Nostrand Co., 1890. 175 pp., 6 x 4 in., boards. 50 cents.

HOUSE-DRAINAGE AND SANITARY PLUMBING.

By Wm. Paul Gerhard. 12th ed. (Van Nostrand Science Series.) N. Y., D. Van Nostrand Co., 1907. 231 pp., 6 pl., 6 x 4 in., boards. 50 cents. (Gift of the author and publisher.)

THE DISPOSAL OF HOUSEHOLD WASTES:

A Discussion of the Best Methods of Treatment of the Sewage of Farm-Houses, Isolated Country Houses, Suburban Dwellings, Houses in Villages and Smaller Towns, and of Larger Institutions, such as Hospitals, Asylums, Hotels, Prisons, Colleges, etc., and of the Modes of Removal and Disposal of Garbage, Ashes, and Other Solid House Refuse. By Wm. Paul Gerhard. 3d ed. N. Y., D. Van Nostrand Co., 1915. 195 pp., 4 illus., 6 x 4 in., boards. 50 cents.

STRENGTH OF MATERIALS.

By James E. Boyd. 2d ed., rev. and enl. N. Y., McGraw-Hill Book Co., Inc.; Lond., Hill Publishing Co., Ltd., 1917. 16 + 380 pp., 254 illus., 9 x 6 in., cloth. \$3.00.

No radical changes have been made in the present edition of this book. A chapter on Curved Beams and Hooks has been added and part of a chapter on Theories of Failures. The most important addition is the method of Area Moments for deriving the equations of the elastic line of beam. The book has been designed to be used in connection with either "Cambria Steel" or "Carnegie Pocket Companion."

FARM CONCRETE.

By K. J. T. Ekblaw. N. Y., The Macmillan Co., 1917. 11 + 295 pp., 77 illus., 16 pl., 8 x 5 in., cloth. \$1.60.

A simple, non-technical, yet reasonably comprehensive, account of the methods of using concrete for farm buildings, fences, drains, bridges, etc. Intended primarily for those without experience in the use of concrete.

PAINT RESEARCHES AND THEIR PRACTICAL APPLICATION.

By Henry A. Gardner. Washington, D. C. (privately printed), 1917. 384 pp., 155 illus., 9 x 6 in., cloth. \$5.00.

This volume is a summary of the author's investigations conducted at the Institute of Industrial Research for the Educational Bureau of the Paint Manufacturers' Association of the United States. Contents: The Growth of the Prepared Paint Industry and Its Relation to the Work of the Painter; The White Pigment Industry; Physical Characteristics of Pigments and Paints; Tests of Lithopone; Washington Paint Oil Tests; Paint Protection for Portland-Cement Surfaces; Paints to Prevent Electrolysis in Concrete Structures; Paints for Metal; Marine Paints; Arlington Paint Tests; Observations on Painted Lumber; Impregnated Panel Tests; Fire Retardant Paints for Shingles and Other Wooden Structures; The Composition of Paint Vapors; The Toxic and Antiseptic Properties of Paints; The Light-Reflecting Values of White and Colored Paints; Formation and Inhibition of Mildew in Paints; Fungi on Painted Surfaces; Changes Occurring in Oils and Paste Paints, Due to Autohydrolysis of the Glycerides; The Effect of Pigments upon the Constants of Linseed Oil; Storage Changes in Vegetable and Animal Oils; Paint Driers and Their Application; Miscellaneous Oil Investigations; The Application of Paints and Finishes to Wood.

AMERICAN HYDROELECTRIC PRACTICE:

A Compilation of Useful Data and Information on the Design, Construction, and Operation of Hydro-electric Systems from the Penstocks to Distribution Lines. By William T. Taylor and Daniel H. Braymer. N. Y., McGraw-Hill Book Co., Inc.; Lond., Hill Publishing Co., Ltd., 1917. 14 + 439 pp., 258 illus., 9 x 6 in., cloth. \$5.00.

Not a textbook on the fundamentals underlying the design and construction of the parts of a hydro-electric system, but a compilation of the practical and essential features of design, construction, and operation as used in many plants, interpreted and arranged for use by designers and engineers. Contents: General Survey of Water-Power Engineering; Low, Medium and Head Developments; Layout and Selection of Plant Equipment; Transmission Line Construction and Operation; Plant Line and Substation Costs; System Operation and Economics; Special Plant and Line Problems; Data, Reference Tables and System Diagrams.

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JUNIORS

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JUNIORS (Continued)

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- WRIGHT, FREDERICK JOHN. First Asst. Engr. to County Engr. of Passaic County, 191 Fulton Pl., Paterson, N. J.

DEATHS

- ARNOLD, WILLIAM HARRY. Elected Member, May 1st, 1907; died, August 13th, 1917.
- CRANDALL, CHARLES LEE. Elected Junior, June 7th, 1876; Member, October 5th, 1892; died August 25th, 1917.

Total Membership of the Society, September 6th, 1917.

8 405.

MONTHLY LIST OF RECENT ENGINEERING ARTICLES OF INTEREST

(July 2d to August 1st, 1917)

NOTE.—This list is published for the purpose of placing before the members of this Society, the titles of current engineering articles, which can be referred to in any available engineering library, or can be procured by addressing the publication directly, the address and price being given wherever possible.

LIST OF PUBLICATIONS

In the subjoined list of articles, references are given by the number prefixed to each journal in this list:

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| (2) <i>Proceedings, Engrs. Club of Phila., Philadelphia, Pa.</i> | (32) <i>Mémoires et Compte Rendu des Travaux, Soc. Ing. Civ. de France, Paris, France.</i> |
| (3) <i>Journal, Franklin Inst., Philadelphia, Pa., 50c.</i> | (33) <i>Le Génie Civil, Paris, France, 1 fr.</i> |
| (4) <i>Journal, Western Soc. of Engrs., Chicago, Ill., 50c.</i> | (34) <i>Portefeuille Economiques des Machines, Paris, France.</i> |
| (5) <i>Transactions, Can. Soc. C. E., Montreal, Que., Canada.</i> | (35) <i>Nouvelles Annales de la Construction, Paris, France.</i> |
| (7) <i>Gesundheits Ingenieur, München, Germany.</i> | (36) <i>Cornell Civil Engineer, Ithaca, N. Y.</i> |
| (8) <i>Stevens Indicator, Hoboken, N. J., 50c.</i> | (37) <i>Revue de Mécanique, Paris, France.</i> |
| (9) <i>Industrial Management, New York City, 25c.</i> | (38) <i>Revue Générale des Chemins de Fer et des Tramways, Paris, France.</i> |
| (11) <i>Engineering (London), W. H. Wiley, 432 Fourth Ave., New York City, 25c.</i> | (39) <i>Technisches Gemeindeblatt, Berlin, Germany, 0, 70m.</i> |
| (12) <i>The Engineer (London), International News Co., New York City, 35c.</i> | (40) <i>Zentralblatt der Bauverwaltung, Berlin, Germany, 60 pfg.</i> |
| (13) <i>Engineering News-Record, New York City, 15c.</i> | (41) <i>Electrotechnische Zeitschrift, Berlin, Germany.</i> |
| (15) <i>Railway Age Gazette, New York City, 15c.</i> | (42) <i>Proceedings, Am. Inst. Elec. Engrs., New York City, \$1.</i> |
| (16) <i>Engineering and Mining Journal, New York City, 15c.</i> | (43) <i>Annales des Ponts et Chaussées, Paris, France.</i> |
| (17) <i>Electric Railway Journal, New York City, 10c.</i> | (44) <i>Journal, Military Service Institution, Governors Island, New York Harbor, 50c.</i> |
| (18) <i>Railway Review, Chicago, Ill., 15c.</i> | (45) <i>Coal Age, New York City, 10c.</i> |
| (19) <i>Scientific American Supplement, New York City, 10c.</i> | (46) <i>Scientific American, New York City, 15c.</i> |
| (20) <i>Iron Age, New York City, 20c.</i> | (47) <i>Mechanical Engineer, Manchester, England, 3d.</i> |
| (21) <i>Railway Engineer, London, England, 1s. 2d.</i> | (48) <i>Zeitschrift, Verein Deutscher Ingenieure, Berlin, Germany, 1, 60m.</i> |
| (22) <i>Iron and Coal Trades Review, London, England, 6d.</i> | (49) <i>Zeitschrift für Bauwesen, Berlin, Germany.</i> |
| (23) <i>Railway Gazette, London, England, 6d.</i> | (50) <i>Stahl und Eisen, Düsseldorf, Germany.</i> |
| (24) <i>American Gas Engineering Journal, New York City, 10c.</i> | (51) <i>Deutsche Bauzeitung, Berlin, Germany.</i> |
| (25) <i>Railway Mechanical Engineer, New York City, 20c.</i> | (52) <i>Rigische Industrie-Zeitung, Riga, Russia, 25 kop.</i> |
| (26) <i>Electrical Review, London, England, 4d.</i> | (53) <i>Zeitschrift, Oesterreichischer Ingenieur und Architekten Vereines, Vienna, Austria, 70h.</i> |
| (27) <i>Electrical World, New York City, 10c.</i> | (54) <i>Transactions, Am. Soc. C. E., New York City, \$12.</i> |
| (28) <i>Journal, New England Water-Works Assoc., Boston, Mass., \$1.</i> | (55) <i>Transactions, Am. Soc. M. E., New York City, \$10.</i> |
| (29) <i>Journal, Royal Society of Arts, London, England, 6d.</i> | (56) <i>Transactions, Am. Inst. Min. Engrs., New York City, \$6.</i> |
| (30) <i>Annales des Travaux Publics de Belgique, Brussels, Belgium, 4 fr.</i> | (57) <i>Colliery Guardian, London, England, 5d.</i> |
| (31) <i>Annales de l'Assoc. des Ing. Sortis des Ecoles Spéciales de Gand, Brussels, Belgium, 4 fr.</i> | (58) <i>Proceedings, Engrs. Soc. W. Pa., 2511 Oliver Bldg., Pittsburgh, Pa., 50c.</i> |

- (59) *Proceedings*, American Water-Works Assoc., Troy, N. Y.
 (60) *Municipal Engineering*, Indianapolis, Ind., 25c.
 (61) *Proceedings*, Western Railway Club, 225 Dearborn St., Chicago, Ill., 25c.
 (62) *American Drop Forger*, Thaw Bldg., Pittsburgh, Pa., 10c.
 (63) *Minutes of Proceedings*, Inst. C. E., London, England.
 (64) *Power*, New York City, 5c.
 (65) *Official Proceedings*, New York Railroad Club, Brooklyn, N. Y., 15c.
 (66) *Gas Journal*, London, England, 6d.
 (67) *Cement and Engineering News*, Chicago, Ill., 25c.
 (69) *Der Eisenbau*, Leipzig, Germany.
 (71) *Journal*, Iron and Steel Inst., London, England.
 (71a) *Carnegie Scholarship Memoirs*, Iron and Steel Inst., London, England.
 (72) *American Machinist*, New York City, 15c.
 (73) *Electrician*, London, England, 18c.
 (74) *Transactions*, Inst. of Min. and Metal., London, England.
 (75) *Proceedings*, Inst. of Mech. Engrs., London, England.
 (76) *Brick*, Chicago, Ill., 20c.
 (77) *Journal*, Inst. Elec. Engrs., London, England, 5s.
 (78) *Beton und Eisen*, Vienna, Austria, 1, 50m.
 (79) *Forscheraarbeiten*, Vienna, Austria.
 (80) *Tonindustrie Zeitung*, Berlin, Germany.
 (81) *Zeitschrift für Architektur und Ingenieurwesen*, Wiesbaden, Germany.
 (83) *Gas Age*, New York City, 15c.
 (84) *Le Ciment*, Paris, France.
 (85) *Proceedings*, Am. Ry. Eng. Assoc., Chicago, Ill.
 (86) *Engineering-Contracting*, Chicago, Ill., 10c.
 (87) *Railway Engineering and Maintenance of Way*, Chicago, Ill., 10c.
 (88) *Bulletin of the International Ry. Congress Assoc.*, Brussels, Belgium.
 (89) *Proceedings*, Am. Soc. for Testing Materials, Philadelphia, Pa., \$5.
 (90) *Transactions*, Inst. of Naval Archts., London, England.
 (91) *Transactions*, Soc. Naval Archts. and Marine Engrs., New York City.
 (92) *Bulletin*, Soc. d'Encouragement pour l'Industrie Nationale, Paris, France.
 (93) *Revue de Métallurgie*, Paris, France, 4 fr. 50.
 (95) *International Marine Engineering*, New York City, 20c.
 (96) *Canadian Engineer*, Toronto, Ont., Canada, 10c.
 (98) *Journal*, Engrs. Soc. Pa., Harrisburg, Pa., 30c.
 (99) *Proceedings*, Am. Soc. of Municipal Improvements, New York City, \$2.
 (100) *Professional Memoirs*, Corps of Engrs., U. S. A., Washington, D. C., 50c.
 (101) *Metal Worker*, New York City, 10c.
 (102) *Organ für die Fortschritte des Eisenbahnwesens*, Wiesbaden, Germany.
 (103) *Mining and Scientific Press*, San Francisco, Cal., 10c.
 (104) *The Surveyor and Municipal and County Engineer*, London, England, 6d.
 (105) *Metallurgical and Chemical Engineering*, New York City, 25c.
 (106) *Transactions*, Inst. of Min. Engrs., London, England, 6s.
 (107) *Schweizerische Bauzeitung*, Zürich, Switzerland.
 (108) *Southern Machinery*, Atlanta, Ga., 10c.
 (109) *Journal*, Boston Soc. C. E., Boston, Mass., 50c.
 (110) *Journal*, Am. Concrete Inst., Philadelphia, Pa., 50c.
 (111) *Journal of Electricity, Power and Gas*, San Francisco, Cal., 25c.
 (112) *Internationale Zeitschrift für Wasser-Versorgung*, Leipzig, Germany.
 (113) *Proceedings*, Am. Wood Preservers' Assoc., Baltimore, Md.
 (114) *Journal*, Institution of Municipal and County Engineers, London, England, 1s. 6d.
 (115) *Journal*, Engrs. Club of St. Louis, St. Louis, Mo., 35c.
 (116) *Blast Furnace and Steel Plant*, Pittsburgh, Pa., 15c.

LIST OF ARTICLES

Bridges.

- Design and Construction Details of a Long Concrete Arch Bridge.* C. D. Hale. (67) June.
 Reconstruction of Union Pacific Railroad Bridge at Omaha.* (11) June 8.
 Three-Hinged Arch Highway Bridge Built of Timber.* F. W. Haselwood. (13) June 21.
 Cost-Keeping System for Small Bridge and Culvert Jobs. (86) June 27.
 Bascule Bridge at Syracuse Typical of New York Canal Crossings.* Arthur G. Hayden. (13) June 28.
 A Viaduct Built by Maintenance Forces.* (87) July.
 Bascule Bridge Across Cataract River; Details of Construction and Method of Operation of 160-Ft. Span Bascule Bridge at Kingston, Ont.—Precautionary Means Taken to Insure Counterweight Would Exactly Balance the Moving Leaf—How Weight Adjustment Was Determined.* R. K. Palmer. (96) July 5.

* Illustrated.

Bridges—(Continued).

- Bids for Concrete Arch Viaduct Less Than for Steel Design.* H. G. Perring (13) July 12.
 Standard Bridge Floors of Concrete Slabs on Steel Beams.* William Snaith. (13) July 12.
 Locomotive Cranes Erect Cantilever Bridge Over Ohio River.* J. L. DeVou. (13) July 19.
 Monumental Portal Completed at Approach of Manhattan Bridge.* (13) July 19.
 Wide Roadway of Cleveland Bridge Concrete Cheaply.* (13) July 19.
 Suspension Bridges in New Zealand. (12) July 20.
 Bascule Bridge is Erected as a Cantilever.* W. J. Howard. (13) July 26.
 Saving a Railway Bridge Built 63 Years Ago.* (96) July 26.
 Cold Bituminous Mixture for Wood Floor Highway Bridges.* B. H. Piepmeyer. (86) Aug. 1.

Electrical.

- High Tension Transmission Lines, Poles and Towers.* Lesslie R. Thomson. (5) Oct.-Dec., 1916.
 The Making of Rates After Valuation. William J. Norton. (4) May.
 The Nature of the Power Requirements of the Electrochemical Industry. F. A. Ladbury. (4) May.
 Dielectric Losses in Insulating Materials.* C. E. Skinner. (3) June.
 Economical Combination of Water Power and Steam Plants and a Convenient Method of Solution.* H. St. Clair Putnam. (42) June; (64) July 24.
 Electrolysis—Troubles Caused Thereby and Remedies Which may be Applied.* Albert F. Ganz. (28) June.
 The Fundamentals of Successful High-Tension Cable Joints. D. W. Roper. (42) June.
 Illumination of the Panama-Pacific International Exposition.* W. D'A. Ryan. (42) June.
 The Influence of Dielectric Losses on the Rating of High-Tension Underground Cables.* A. F. Bang and H. C. Louis. (42) June.
 Insulation Characteristics of High-Voltage Cables.* W. S. Clark and G. B. Shanklin. (42) June.
 Present Practice in the Design and Manufacture of High-Tension Insulators.* A. O. Austin. (42) June.
 Note on the Testing of Magneto Magnets.* J. D. Morgan. (11) June 15.
 Modern Dynamo Electric Machinery.* Alexander Gray. (3) July.
 Power House Economics.* V. T. Kropidowski. (25) July.
 Possibilities of Industrial Electric Heating.* (Discussion held at Pacific Coast Section of N. E. L. A.) (11) July 1.
 Bell Transformers: Design and Tariffs.* E. Wirz. (73) July 6.
 Electric Vehicles in Municipal Service. S. L. Pearce. (104) July 6.
 New Concentric Standard Dynamometer Wattmeter for Heavy Currents: and Concentric Non-Inductive Standards of Low Resistance.* A. E. Moore. (73) July 6.
 Power Station Centralization and Inter-Linking. John P. C. Kivlen. (Paper read before the Assoc. of Min. Elec. Engrs.) (22) July 6.
 Foundry and Machine Shop Lighting.* C. E. Clewell. (27) July 7.
 Underwriters Laboratories' New Testing Station.* Edgar P. Slack. (27) July 7.
 Collinsville Plant Remodeled.* Thomas Wilson. (64) July 10.
 Practical Talks on Controllers—A-C Contactor Switches.* (64) July 10.
 Engineering Precautions in Radio Installations. Robert H. Marriott. (Abstract of paper read before the Inst. of Radio Engrs.) (73) July 13.
 New Reversing Drive for Tin-Bar Mill at the Monmouthshire Steel and Tinplate Company's Works.* (22) July 13.
 Phase Lag in Current Transformers.* A. J. Makower and A. Wust. (73) July 13.
 Graphical Determination of Alternator Regulation.* A. S. Blatterman. (27) July 14.
 Hints About Mill Lighting.* A. L. Powell. (16) July 14.
 Illumination of Business Office Spaces.* C. E. Clewell. (27) July 14.
 Methods of Making Temporary Motor Repairs.* H. L. Hayes. (27) July 14.
 Bearing Currents in a Rotary Converter.* L. J. Corbett. (111) July 15.
 New Power Station at Albany.* Charles H. Bromley. (64) July 17.
 Depreciation of Electrical Machinery. William H. Easton. (72) July 19.
 The Characteristics of Iron in High Frequency Magnetic Fields.* Ralph Bown. (73) July 20.
 Leads for Electric Furnaces.* Arvid Lindstrom. (26) July 20.
 The Prospects of the Accumulator. (73) July 20.
 Standard Methods of Testing Moulded Insulation. (73) July 20.
 Westinghouse Turbo-Alternators.* (26) July 20.
 Analysis of Design-Constant Curves.* Theo. Schou. (27) July 21.
 Comparison of Dissimilar Transformer Ratings. E. Hagenlocher. (27) July 21.
 Illuminating Iron and Steel Mills.* C. E. Clewell. (27) July 21.
 The Improvement of the Outdoor Substation.* M. M. Samuels. (27) July 21.

* Illustrated.

Electrical—(Continued).

- Capacities of Transformers for Induction Motors.* G. P. Roux. (64) July 24.
 Electric Controllers for Direct-Current Industrial Motors.* A. G. Popcke. (72) July 26.
 Electric Cooking in the Factory.* (26) July 27.
 Electricity Supply Costs.* Frank H. Whysall. (73) July 27.
 Electrolysers and Their Management.* Ernest Reuss. (26) July 27.
 Switch Which Prevents Failure of Signal Current.* H. K. Le Sure. (17) July 28.
 The Unipolar Dynamo and Its Future.* Louis E. Lawrence. (19) July 28.
 Ashley Street Station Remodelled.* John Hunter. (64) July 31.
 Reconnecting Induction Motors—Fractional-Pitch Windings.* A. M. Dudley. (64) July 31.

Marine.

- An Analysis of Model Screw Propeller Experiments.* S. Motora. (11) June 8.
 The German High Sea Fleet and Its Bases.* (12) Serial beginning June 15.
 The Stability of Submarine Boats While Trimming.* S. Motohara. (Abstract of paper read before the Japanese Soc. of Naval Archts.) (11) June 15.
 The Science of Naval Architecture. David Watson Taylor. (19) June 23; (3) July.
 The Submarine Boat: Its Inception and Development. John P. Holland, Jr. (19) June 30.
 The Slidehaul Railway Dry Dock at West Memphis, Arkansas.* Clarke S. Smith. (100) July–Aug.
 Housing the Navy Ashore.* (13) July 5.
 The Real Problem of the Submarine.* (72) July 12.
 Reinforced Concrete for Ships. (96) July 19.
 Reinforced Concrete Ships.* J. L. Weller. (96) July 26.
 American Standard Wooden Steamship.* (11) July 27.

Mechanical.

- Cotton Rope for Power Transmission.* J. Melville Alison. (58) June.
 Development of the Pickling Process: Consideration of Various Methods of Pickling—Conveying Machinery Comparisons—Data Concerning Per Cent. Acid and Time of Pickling for Various Materials and Methods. J. H. Snyder. (Abstract of paper presented at the Fourth Annual Convention of the Am. Drop Forge Assoc.) (62) June.
 Electric Welding on the Rock Island.* E. Wanamaker. (25) June.
 The Elements of Roll Pass Design: How Modifications in Existing Conditions Affect Supposedly Positive Rules—Fixing the Limitations on Possible Reduction per Pass—Action of Materials Under Compression. W. Trinks. (116) June.
 Heat Treatment of Drop Forgings: Particular Attention to Automobile Parts—Methods of Determining Temperature of Steel During Heat Treatment—Checking Stock Distribution by Scleroscope Test—Rate of Heating. W. C. Peterson. (62) June.
 Heat Treatment of Steel Forgings: Interesting Discussion Dealing with Failure in Heat Treatment of Forgings in English Works Practice—Advantages of Water Quenching—Recommendation That Research Work be more Clearly Applied to Shop Practice.* H. H. Ashdown. (Paper read before the Inst. of Mech. Engrs.) (62) June.
 Locomotive Shovel Plates from Old Tires: Adjusting Rolling Mill Equipment to Handle Scrapped Tires. Problems Arising in the Process—Preparing Rolls for Heavy Duty Requirements.* W. S. Standiford. (116) June.
 The Manufacture of Steel Castings: Rapid Developments of the Art of Forming Large Castings—Problems of Design and Treatment Briefly Sketched—Use of Acid and Basic Steels—Shrinkage, Porosity and Annealing Difficulties.* Robert P. Lamont. (Paper presented at the New York Meeting, Am. Iron and Steel Inst.) (116) June.
 Power Tests of Machine Tools.* C. H. Crawford. (25) June.
 Relative Methods of Forming Steel by Pressing, Hammering or Rolling.* John Lyman Cox. (Abstract of paper presented at New York Meeting, Am. Iron and Steel Inst.) (116) June.
 Selection of Machine Tools.* Willard Doud. (25) June.
 Standardizing of Finish on Forgings: Committee Suggested to Standardize Designs and Drawings and to Formulate Working Code for Forging Practice—Desirable Practice for Axles, Crank Shafts, Gear Blanks, etc. E. J. Frost. (Abstract from paper read before the Am. Drop Forge Assoc.) (62) June.
 The Briquetting of Metal Swarf.* (12) June 8.
 Control Gear for Auxiliary Motors for Rolling Mills.* (11) June 15.
 Foundry Facings. H. Winterton. (Paper read before the Birmingham Branch of the British Foundrymen's Assoc.) (47) June 15.
 Repetition Work and Machine Moulding. A. R. Bartlett. (Paper read before the London Branch of the British Foundrymen's Assoc.) (47) Serial beginning June 15.

* Illustrated.

Mechanical—(Continued).

- The Window-Glass Machine.* Robert Linton. (Paper read before Engrs.' Soc. of Western Pennsylvania.) (11) June 15.
- The Spontaneous Ignition Temperatures of Liquid Fuels.* Harold Moore. (12) June 22.
- Tar Oil Fuel and Diesel Engines. Geoffrey Porter. (Paper read before the Diesel Engine Users' Assoc.) (47) June 22.
- Ball Mills for Grinding Ores.* (19) June 23.
- The Gas Film Theory in Relation to Heat Conduction, and a Large Table of Heat Conductivities.* Halbert P. Gillette. (86) June 27.
- Concentrated Potash a By-Product of Cement Mill. (13) June 28.
- Fuel Economy. (22) June 29.
- Improvements in Vacuum Brake Apparatus.* (12) June 29.
- A Modern Bottle Making Plant.* (12) June 29.
- Some Points in High Precision Design.* (12) June 29.
- Welding with Application to Automobile Engineering.* Herbert L. Towns. (Abstract of paper read before Coventry Branch of Inst. of Automobile Engrs.) (11) June 29; (47) July 6.
- Experiments with the Rotating Disk and Peripheral Alarries in Mechanical Flight.* Justin Kay Toles. (19) June 30.
- The Elements of Roll Pass Design.* W. Trinks. (116) July.
- Oxy-Acetylene Welds Under Pressure. (62) July.
- Power House Economics.* V. T. Kropidlowski. (25) July.
- Roll Design for Shrapnel and Shell Bars.* W. S. Standiford. (116) July.
- Structural Changes during Heat Treating: Describing How the Structural Changes Occur—A Critical Point in Heating Must be Obtained in Order to Get Results. James H. Herron. (Paper read before the Am. Drop Forge Assoc.) (62) July.
- Welding by Electric Arc in Railway Shops in America. (21) July.
- Progress in Aeronautics.* H. Bannerman-Phillips. (44) July-Aug.
- Rational and Empirical Formulas for Steam Constants in Fuel Oil Practice.* Robert Sibley and Chas. H. Delany. (111) July 1.
- The Manufacture of Linseed Oil. Glenn H. Pickard. (Paper read at Buffalo Meeting of Am. Inst. of Chemical Engrs.) (105) July 1.
- The Recovery of Potash from Beet Sugar House Waste Liquors. H. E. Zitkowski. (Paper presented at Buffalo Meeting of Am. Inst. of Chemical Engrs.) (105) July 1.
- Metallurgical Processes in the Foundry—Use of Ferromanganese, Ferrosilicon, Chills and Iron Molds.* Alexander E. Outerbridge, Jr. (Address delivered before Phil. Foundrymen's Assoc.) (105) July 1; (20) June 28.
- Cutting Oils—Their Properties, Composition, Examination and Industrial Application. C. W. Copeland. (105) July 1.
- Synthetic Production of Benzene and Toluene from Oil. Andrew Bender. (83) July 2.
- New Armour Boiler Plant.* Thomas Wilson. (64) July 3.
- Unafrow Engine Economy.* A. D. Skinner. (64) July 3.
- "Abrupt" Condensation of Naphthalene. (66) July 3.
- Cost Data on Operation of Small Maintenance Trucks.* Frank T. Sheets. (86) July 4.
- Automatics Used Advantageously in the Machining of Starter Parts.* (72) July 5.
- Fixture for Grinding Relief on Formed Milling Cutters.* Walter G. Grocock. (72) July 5.
- Grinding Rolling-Mill Rolls.* Howard W. Dunbar. (72) July 5.
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- How Rope is Made.* Ernest Elva Weir. (46) July 7.
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- Effect of Countershaft Speed Ratio on Power and Torque.* A. Lewis Jenkins. (72) July 12.
- Keeping Machines on the Job.* Byron T. Hawley. (72) July 12.
- Mechanical Equipment of a Hawaiian Sugar Plantation.* (72) July 12.
- Panama Canal Boiler Shops at Balboa.* Frank A. Stanley. (72) July 12.
- Condenser Tube Corrosion. William Ramsay. (11) July 13.
- The Deterioration of Curtis Rateau Turbine Blading.* A. Fenwick. (Paper read before the South African Inst. of Engrs.) (12) July 13.
- Combination Coal and Gas Firing.* Alex. W. Morgan. (27) July 14.

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- Gas Displaces Electricity for Department Store Lighting.* H. S. Lewis. (24) July 14.
- Handling the Coal from the Cars to the Stokers.* J. A. Longley. (27) July 14.
- Standardizing Screens. (16) July 14.
- The Use of Fuel Oil for Stationary Plants. Frederic Ewing. (Abstract of Discussion before A. I. E. E. and A. S. M. E.) (27) July 14.
- A New Advance in Fuel Oil Economy.* C. D. Stewart. (111) July 15.
- Compound Ammonia Compression.* H. J. MacIntire. (64) July 17.
- Overcoming Cracking in Drying Clay Products. Otis L. Helfrich. (76) July 17.
- Suggested Improvements in the Manufacture of Silica Brick.* C. E. Nesbitt and M. L. Bell. (76) July 17.
- Alignment Chart for Milling Cutters.* A. Lewis Jenkins. (72) July 19.
- The Maag Gear System.* Dexter S. Kimball. (72) July 19.
- Stone Plate Foundry of a Modern Design.* (20) July 19.
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- Formation of Clinkers in Boiler Furnaces. Albert A. Cary. (47) July 20.
- Mechanical Stokers at Collieries. (57) July 20.
- Physical Conditions Relative to the Heating of Regenerative Ovens.* D. Bagley. (22) July 20.
- A System for Fuse Inspection. (12) July 20.
- The Evolution of Artificial Dyestuffs: How American Workers are Reducing the Mazes of Coal-Tar Chemistry to Their Lowest Terms.* Thomas H. Norton. (46) July 21.
- Tire Heating by Gas.* Gilbert C. Shadwell. (24) July 21.
- Industrial Fuel from Gas-Works. E. W. Smith. (66) July 24.
- Small Central Station Operation.* Arthur Groesbeck. (64) July 24.
- What the Intercooler Can Do. Frank Richards. (64) July 24.
- Development of Pneumatic Hand Tools. Glenn B. Harris. (72) July 26.
- Equipment for Expediting Shell-Forging.* (20) July 26.
- Machining Operations on a Stapling Machine.* (72) July 26.
- Welding a Large Cast-Iron Spider.* J. D. Cumming. (72) July 26.
- Coal Concreted from Dusts or Ashes. R. Goulburn Lovell. (From paper read before the Soc. of Architects.) (57) July 27.
- The Down Draught Smokeless Boiler.* A. Bement. (57) July 27.
- The Pulp and Paper Industry in Canada. O. F. Bryant. (29) July 27.
- Some Experiences in Steel-Foundry Practice. T. Brown. (Abstract of paper read before the Sheffield Branch of the British Foundrymen's Assoc.) (47) July 27.
- Economically Planned Coke Handling System at Denver Expedites Removal.* George Wehrle. (24) July 28.
- The Selection of Gearing.* W. H. Phillips. (16) July 28.
- Wire Drawing. A. T. Adam. (19) July 28.
- Dempster-Toogood Continuous Vertical System.* (66) July 31.
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- Longwood Gas Company's New Works.* (66) July 31.
- Proper Draft Conditions in Burning Kilns.* Arthur E. Williams. (76) July 31.
- Refractory Brick—Their Properties and Constituents.* (76) July 31.
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Metallurgical.

- Alumina as a Component of Furnace Slag: Characteristics Due to Alumina; Relations It Bears to Other Slag Components and the Practical Interpretation of Slag Peculiarities Which are Attributed to Alumina.* Wallace G. Imhoff. (116) June.
- The Chemical Reactions of Iron Smelting. Walter Mathesius. (Abstract of paper read before New York meeting of Am. Iron and Steel Inst.) (116) June.
- Metal Melting. H. M. Thornton. (Abstract of paper read before Inst. of Metals.) (11) Serial beginning June 15.
- Wide Diversity of Uses of Gas-Fired Soft Metal Furnaces.* Gilbert C. Shadwell. (24) June 28.
- A New Design of Gas-Fired Crucible Furnace.* (22) June 29.
- Effect of Corrosion on the Ductility and Strength of Brass.* Paul D. Merica. (19) June 30.
- Installation of Large Turbo-Generators: Specifications for Four Blast Furnace Plant.* Richard H. Rice. (Abstract of paper read before the Am. Iron and Steel Inst.) (116) July.
- Sulphur as a Component of Furnace Slag.* Wallace G. Imhoff. (116) July.
- Cobaltum, the New Steel Alloy. (11) July 6.
- Electric Steel Furnaces, with Special Reference to the Greaves-Etchells Type.* E. Kilburn Scott. (22) July 6.
- Iron in Aluminum Bronze. C. Vickers. (47) July 6.

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- Copper Smelting at Santa Lucia.* Francis Church Lincoln. (16) July 7.
 Properties and Structure of Nickel Steel.* S. W. Parker. (20) July 12.
 Ammonia Leaching of Calumet Tailings.* C. Harry Benedict. (16) July 14.
 The Burro Mountain Concentrator.* F. C. Blickensderfer. (16) July 14.
 Concentration at Humboldt, Arizona.* George M. Colvocoresses. (16) July 14.
 Continuous Drum Filters.* Carl J. Trauerman. (16) July 14.
 Drying Flotation Concentrates. H. H. Adams. (16) July 14.
 Inhibitory Films in Flotation.* Will H. Coghill. (16) July 14.
 Milling Wisconsin Lead-Zinc Ores.* Walter Schultz. (16) July 14.
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 Solution of Grinding Problems.* Sergio Bagnara. (16) July 14.
 The Tom Reed Mill, Oatman, Ariz.* H. P. Flint. (16) July 14.
 Sands Used in Metallurgical Practice. P. G. H. Boswell. (Abstract of paper read before the Soc. of Chemical Industry.) (57) July 20.
 Milling Costs at the Inspiration and Bunker Hill Plants. (16) July 21.
 Sulphatizing with Weak Sulphurous Gases.* George C. Westby. (16) July 21.
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 The Heavy Shall Rise and the Light Shall Fall.* (46) July 28.
 North American Flotation Plants. (16) July 28.

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- Military Sanitation. W. P. Chamberlain. (109) June.
 Organization and Duties of Engineer Troops. Frederick B. Downing. (109) June; (18) July 28.
 Canadian Cantonments All Built by One Contractor. (13) June 28.
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 Military Motor Truck Design. H. D. Church. (19) July 7.
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 Build Army Aviation Camp Near Detroit.* (13) July 19.
 Forging Rifle Barrels.* Fred H. Colvin. (72) July 19.
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 Construction and Structural Features of Cantonments for New York National Army.* (86) July 25.
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- A Contribution to the Micro-Petrology of Coal.* George Hickling. (106) July.
 Forms of Electric Power Best Suited for the Various Loads Encountered in the Operation of Bituminous Coal Mines. R. L. Kingsland. (42) July.
 The Higher Training of Colliery Managers. G. L. Kerr. (106) July.

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Fig. 3. *arm* and *tail* of *T. S.*

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- A New Electric Mine Hoist at Butte, Montana.* R. S. Sage. (42) July.
 Can Your Mining Methods be Improved? (76) July 3.
 The Lubrication of Mine Machinery. James A. Boyd. (Abstract from *Bulletin of the Canadian Min. Inst.*) (57) July 6.
 Underground Signalling Bells.* L. Fokes. (22) July 6.
 Efficiency of Coal Production. C. B. Officer. (45) July 7.
 Growth of the Talc Industry.* Freeland Jewett. (16) July 7.
 Longwall Mining in Northern Illinois. Edward T. Bent. (Abstract of address before Ill. Min. Inst.) (45) July 7.
 The Scope and Value of State Mining Bureaus. E. K. Soper. (Abstract of address before Idaho Min. Assoc.) (16) July 7.
 The Development of the Petroleum Industry in Assam. H. S. Maclean Jack. (29) July 13.
 Rescue and Recovery Operations in Coal Mines. James W. Paul. (57) July 13.
 Forestry as an Adjunct to Mining. J. Crow Taylor. (45) July 14.
 Modern Coal Mining Plant at Arista, W. Va.* J. F. Morris. (45) July 14.
 The Sugar Creek (Ohio) Mine Fire. (45) July 14.
 A Two Stacker Gold Dredge.* (46) July 14.
 Methods of Dealing with Gob Fires.* S. J. Bridges. (22) July 20.
 Risk of Gas Ignition by Underground Magneto Telephones.* L. Fokes. (22) July 20.
 Ball-Bearing Motors in Modern Mine Equipment.* Robert Hirsch. (45) July 21.
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 Electrically Operated Rock Drill.* E. M. Mackie. (45) July 21.
 Equipment at a 50-Year-Old Mining Operation.* (45) July 21.
 Facts About Self-Contained Portable Electric Mine Lamps.* H. O. Swoboda. (45) July 21.
 A Fourteen Hundred Foot Raise.* Charles H. Foreman. (16) July 21.
 Handling Mine Water.* H. E. Cole. (45) July 21.
 Mining Machinery as a Factor in the War.* (45) July 21.
 New Method in Screening, Picking and Loading Bituminous Coal.* (45) July 21.
 New Thin-Seam Mounting for Jackhammers.* H. L. Hicks. (45) July 21.
 Observations on Modern Coal Washing.* G. H. Elmore. (45) July 21.
 Prospecting an Iron Ore Property.* J. F. Kellock Brown. (16) July 21.
 Sources of Sulphur in Oils. G. Sherburne Rogers. (103) July 21.
 Survey of Inclines Without Auxiliaries.* A. J. Sale. (103) July 21.
 Automatic Safety Mine-Car Cager.* N. L. Harmon. (45) July 28.
 Drill Bits and Drill Steel for Metal Mining.* George H. Gilman. (16) July 28.
 Electric Blasting-Caps and Delay-Electric Igniters.* I. H. Barkdoll. (103) July 28.
 Location and Construction of Mine Tracks.* J. McCrystle. (45) Serial beginning July 28.
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 Rebuilding a Tipple.* Miner Raymond. (45) July 28.
 Sampling and Analysing Zinc Ores and Products. J. H. Hastings. (16) July 28.
 Terry Turbines at Coal Mines.* (45) July 28.

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- General Education for the Engineer. Edward E. Wall. (115) May-June.
 Some Suggestions for Improvements in the Engineering Profession. F. G. Jonah. (Paper read before the Engrs. Club of St. Louis.) (115) May-June.
 The Engineering Society in War Time. George C. Whipple. (109) June.
 Hammer Hour System of Overhead: Consideration of the Problem of Dividing the Forge Shop Overhead Among the Various Groups of Equipment in the Shop Itself—Tables Showing Non-Productive Labor, Purchase and Expense Items. R. T. Herdegen. (Abstract from paper read at the Fourth Annual Convention of the Am. Drop Forge Assoc.) (62) June.
 Public-Service Regulation. Thomas W. D. Worthen. (28) June.
 Intensive Production Establishment Charges and Selling Price.* (Paper read before the Exeter Chamber of Commerce.) (12) June 8.
 Character the Most Essential Qualification for Success in Engineering. W. A. Cattell. (24) June 23.
 British Decimal Coinage: A Choice of Unit. Harry Allcock. (22) June 29.
 A Correct Financial Plan the Most Important Element in the Success of a Public Utility. G. E. Claffin. (24) June 30.
 The Physical Basis of Color-Technology.* M. Lucklesch. (3) July.
 Valuation of Public Service Property—Overhead Expense. A. S. B. Little. (83) July 2.
 Logic for Engineers—Induction and Deduction. Halbert P. Gillette. (86) July 4.
 An Ionization Manometer. O. E. Buckley. (19) July 7.
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- The Electrical Properties of Gases—1.: Which Enable Important Problems in Physics to be Studied.* Sir J. J. Thomson. (19) Serial beginning July 14.
- The Action of Aluminium Chloride on Pure Aromatic Hydrocarbons.* Robert J. Moore and Gustav Egloff. (105) July 15.
- Fundamental Hue Scale for Scientific Color Designation.* (105) July 15.
- Notes on Public Utility Rates. C. E. Grunsky. (111) July 15.
- The Possibilities of Developing an American Potash Industry. Richard K. Meade. (Paper read before the Am. Inst. of Chemical Engrs.) (105) July 15.
- Surety Bonds Under Government Contracts. (86) July 18.
- Knife-Edge Materials and Stresses.* H. L. Van Keuren. (Abstract of paper read before National Scale Men's Assoc.) (15) July 20.
- Shall Great Britain and America Adopt the Metric System. Walter Renton Ingalls. (Paper read before the Inst. of Min. and Metallurgy.) (29) July 20.
- Exploring the Realms of Science for Photographic Improvements.* (46) July 21.
- Protecting Our Timber Resources: Using the Heliograph to Fight Forest Fires.* Arthur L. Dahl. (19) July 21.
- Making Industrial Valuation for Tax Purposes. George E. Barrows. (13) July 26.
- Against the Compulsory Adoption of the Metric System. H. Cunliffe. (From paper read before the Incorporated Soc. of Inspectors of Weights and Measures.) (104) July 27.
- Electric Discharge and Crop Production.* (12) July 27.
- Lighting in the Textile and Clothing Industry.* C. E. Clewell. (27) July 28.
- True Efficiency in Engineering Requires a Thorough Knowledge of the Human Factor. John P. Frey. (24) July 28.

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- Districting or Zoning in St. Louis. (115) May-June.
- Improved Major-Street Plan for St. Louis Proposed by City Plan Commission.* Harold Bartholomew. (13) July 19.
- City Managers: A New Opportunity for Engineers. (86) July 25.
- Berkeley, Cal., Zone Ordinance. (86) Aug. 1.

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- Centralized Production of Locomotive Repair Parts.* George Armstrong. (25) June.
- Developments in Railway Shop Tools. (25) June.
- Enter Roller Bearings for Steel Mill Cars: The Steel Industry Takes a Hand in the Rolling Stock Efficiency Game—Interesting Tests by Steel Companies on Train Resistance, Made by a Dynamometer Testing Device—Results of Findings.* P. B. Lieberman. (116) June.
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- Locomotive Feed Water Heating.* (25) June; (47) July 20.
- Locomotive Rod Job.* (25) June.
- Milling Machines in Railroad Shops.* Harvey De Witt Wolcomb. (25) June.
- Santa Fe Double-Deck Stock Cars.* (25) June.
- Theory, Practice and Results of Fuel Economy. W. P. Hawkins. (25) June.
- Modern High-Power Locomotive Economy in France. (12) June 8.
- Rate Fundamentals and Tariff Interpretation. Sydney A. Hale. (76) July 3.
- Longitudinal Sleepers for Railways and Tramways. (12) July 13.
- Design of a Railway Tank.* (96) July 19.
- Railway-Tunnel Concrete Softened by Locomotive Gases. Charles A. Newhall. (13) June 21.
- The Duplex Locomotive Stoker.* (18) June 23; (25) July; (15) July 13.
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- Pacific and Santa Fe Type Locomotives for the St. Louis-San Francisco Ry.* (18) June 23.
- Dragline Eliminates Haulage Equipment on Railroad Work.* W. A. Pillans. (13) June 28.
- Double-Tracking a Railroad Through a Mountain Canyon.* (46) June 30.
- New Union Passenger Station at Denver.* (18) June 30.
- Non-Telescoping Car for the Erie.* (17) June 30.
- Ventilation of the Connaught Tunnel, Canadian Pacific Ry.* (18) June 30.
- Broad Rails vs. Deep Rails.* George H. Barbour. (58) July.
- Conversion of Simple Expansion to Compound Locomotives on French Railways.* (21) July.
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- Graphic Display of Individual Daily Fuel Records.* Hiram J. Slifer. (Abstract of paper presented to the International Ry. Fuel Assoc.) (25) July.
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- Improved Pop Valve for Locomotives.* (21) July.
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 Heavier Car Loading Is Winning Out.* (15) July 13.
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- Reconstruction Executed Safely of Complicated Elevated Railway.* George D. Fried. (13) July 5.
 The Harlem River Subway Tunnel, New York.* Frank W. Skinner. (11) July 13.
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 Useful Diagrams for the Design of Subway Sidewalls.* Henry Hyman. (13) Aug. 16.

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- Bituminous Foundations for Sheet Asphalt Surfaces.* L. Kirschbaum. (13) June 21.
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- Detailed Cost of Bituminous Surface Treatment Work at Philadelphia. (86) July 4.
 Removal of Excess Water in Concrete Road Construction. (86) July 4.
 Use of Subbase with Concrete Surfaces. (86) July 4.
 Modern Roadmaking Machinery: Its Selection, Use and Care. W. Huber. (Abstract of paper read before the Fourth Canadian and International Good Roads Congress.) (96) July 5.
 Recent Developments in Foundations and Fillers for Brick Pavements.* John S. Crandell. (76) July 17.
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 Commercial Deposits of Road Materials in Illinois. (86) Aug. 1.
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- Cleaning of St. Louis Streets with Vacuum Cleaner. C. M. Talbert. (115) May-June.
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 Measuring, Locating and Stopping Leaks on Sewer Contract. Robert B. Ray. (13) June 21.
 New York Adopts Rules for Sewage Works and Outlet Design. (13) June 21.
 Milwaukee Air-Diffusion Studies in Activated Sludge.* Carl H. Nordell. (13) June 28.
 Efficiency Methods in Street Cleaning.* (60) July.
 Reclaiming the Everglades of Florida.* Isham Randolph. (3) July.
 Industrial Wastes Disposal. Harrison P. Eddy. (Paper read at Buffalo meeting of Am. Inst. of Chemical Engrs.) (105) July 1.
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 Dallas Builds Imhoff Sewage Works Fed by Concrete Pressure Line.* Richard Gould. (13) July 5.
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 Unusual Location of Tanks Obviates Pumping at Sewage Filters.* G. Everett Hill. (13) July 12.
 Electric Vehicles and Their Use on Cleansing Work in Sheffield.* J. A. Priestley. (104) July 13; (73) July 20.
 Novel System of Heating Buildings.* E. D. Densmore. (101) July 13.
 Flushing—Its Place in the Street Cleaning Field.* Raymond W. Parlin. (96) July 19.
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 Cleansing Work at Nottingham. J. Terry. (Paper read before the Institute of Cleansing Superintendents.) (104) July 20.
 Furnace Heating in a Rural Schoolhouse.* Lawrence S. Keir. (101) July 20.
 The Public Comfort Station of To-day.* David A. Calhoun. (Paper read before the National Assoc. of Master Plumbers.) (101) July 20.
 The Theoretical Consideration of the Ventilation of Sub-Stations and Transformer Houses.* T. H. Wood. (26) July 20.
 Some Sewerage Details in Calgary.* (96) July 26.
 Plumbing in Manufacturing Buildings.* Harold L. Alt. (101) Serial beginning July 27.
 Tentative Specifications for Burned Clay Sewer Pipe.* (76) July 31.
 Changes in Cleveland Sewage-Disposal Plans Recommended. George W. Fuller. (Abstract of report.) (13) Aug. 16.

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- Pointers on Prepared Roofing.* (108) June.
 Some Fundamentals of Schoolhouse Design. C. L. Wooldridge. (58) June.
 The Effect of Sea Water on Some of the Concrete Structures in the Philippine Islands.* J. L. Harrison. (86) June 27.
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- Important Series of Steel Column Tests Establishes Principles of Strength.* (13) June 28.
- Northern Pacific Railway has Fine New Drafting Room. (13) June 28.
- Condensation Under Various Types of Roofs Shown by Tests.* (13) July 5.
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- Gasholder at the Tottenham Light, Heat and Power Company's Works.* (11) July 6.
- Practice in Bridge and Girder Yards from A Theoretical Standpoint.* George Kenworthy. (12) July 6.
- Practical Wood Preservation.* W. E. Hoyt. (45) July 7.
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- Building Contractor and Sub-Contracts. Algernon Blair. (Abstract of paper presented before Assoc. of Government Contractors.) (86) July 25.
- Atlanta Fire had Lessons for City Officials and Engineers. (Abstract of report of National Board of Fire Underwriters.) (13) July 26.
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- Survey of Inclines Without Auxiliaries.* A. J. Sale. (103) July 21.
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- The Extension of the Water District Idea in Maine. Harvey D. Eaton. (28) June.
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- Forestry in Relation to Public Water Supplies. J. W. Toumey. (28) June.
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- Duty Trials on Pumping Engines at John Street Station, Toronto. Robert W. Angus. (96) June 21.
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- Special Campaigns Against Water Waste.* C. R. Knowles. (18) June 30.

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- Laying 48-Inch Main Across River.* Hartley M. Phelps. (60) July.
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 Building a 2 000 000-Gallon Reinforced Concrete Tank.* (96) July 5.
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 Build Concrete Shell Around Tall Steel Water Tanks.* (13) Aug. 16.
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- Concrete Bulkhead Wall Replaces Old Timber Structure.* (13) June 21.
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* Illustrated.